DOCUMENT RESUME

ED 257 197 EA 017 742

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TITLE Improving School Effectiveness by Teaching Thinking Skills.
PUB DATE 8 Mar 85
NOTE 6p.; Paper presented at the Annual Meeting of the American Association of School Administrators (117th, Dallas, TX, March 8-11, 1985).
PUB TYPE Reports - Descriptive (141) -- Viewpoints (120) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Development; Critical Thinking; *Curriculum Design; Curriculum Development; *Educational Improvement; Elementary Secondary Education; Learning Processes; *Logical Thinking; Problem Solving; *Program Implementation; *School Effectiveness; Teaching Methods
IDENTIFIERS Design for Thinking; Guilford (J P); *Strategic Reasoning Program; Structure of Intellect; Tulsa Public Schools OK; Upton (Albert)

ABSTRACT

This paper describes a plan to improve school effectiveness in the Tulsa (Oklahoma) Public Schools by incorporating instruction in thinking skills. The program selected by the school district was the Strategic Reasoning Program, based on Albert Upton's Design for Thinking and J. P. Guilford's Structure of the Intellect. The Strategic Reasoning program is based on instruction in six thinking skills: (1) "thing-making" (conceptualization), (2) qualification, (3) classification, (4) structure analysis (relation of parts to whole), (5) operation analysis, and (6) seeing analogies. It is implemented in four stages: (a) introduction to the six thinking skills; (b) use of these skills to solve problems; (c) transference of thinking skills to interdisciplinary subject matter; and (d) application of thinking skills to analyzing and solving real-life problems. The program is integrated into regular curricular programs such as English or reading. Teacher and learner responses to the program in Tulsa have generally been positive, but extensive preparation and teacher training are required to implement it properly. The paper concludes with observations on the appropriateness of instruction in thinking skills to the ongoing transition from an industrial to an information-based society. (TE)

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Improving School Effectiveness

by

Teaching Thinking Skills

A Presentation Prepared

for the

American Association of School Administrators Convention

March 8, 1985

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EA 017 742

IMPROVING SCHOOL EFFECTIVENESS BY TEACHING THINKING SKILLS

Research in recent years on school effectiveness has revealed a number of factors which, if properly implemented or manipulated, will assure more effective and productive schools.

When factors such as an orderly learning environment, dynamic leadership and proper emphasis on learning are incorporated into the environment of a school, gains in productivity (growth in student achievement) undoubtedly do occur. There may be limitations, however, on the amount of increase in productivity that can be expected by only manipulating environmental factors in the school.

It would seem reasonable to expect that in the future, writers may be expounding on another effective schools criterion, that of incorporating instruction in the thinking processes into the program of the school. The reason seems clear. Once the maximum gains have been attained by manipulating variables external to the learner, one must then address the manner in which the learner processes information and learning in the school setting.

In the typical classroom, learners are required to commit to memory large quantities of information with one basic purpose in mind: to give it back verbatim to the teacher on the next test. There is seldom any variation from this strategy. Large amounts of facts are quickly forgotten while the learner commits to memory large amounts of additional facts to use in passing the next test. Learners who memorize well usually survive. Others struggle. Many simply flunk.

While learners are criticized for their failure to think logically and sequentially, it must be understood that their failure to do so is based on a very simple reason. They have not generally been taught to use logical, sequential thinking processes in the classrooms of our schools.

In February, 1982, I presented to the Tulsa School Board a plan to promote improved school effectiveness in the Tulsa Public Schools. As part of that plan I recommended the establishment of a task force to be assigned the full-time responsibility of working with thirteen northside schools--ten elementary, two middle, and one senior high school. These schools had been identified as having the students with lowest academic achievement. I stated that it would be the responsibility of the task force to continue the assessment of needs of these schools, which had only begun. In meeting with principals, teachers and community individuals and groups, I said that their work should begin during the spring months of the 1981-82 school year with their continued assignment subject to annual review. In the last paragraph of my report to the Board I stated, "Many of the recommendations for these schools, as outlined by the plan of action, are applicable to other northside schools and to all other schools in the Tulsa Public School System. I am certain that many of the developments which are ultimately implemented in these schools as a result of the efforts of this task force working with the principals, teachers, parents, and school communities, will also be applicable to all of the other schools in the school system. The efforts of this task force should not be viewed as an attempt to

respond only to the needs of these schools, but as an effort on the part of this school system to address the very serious educational needs of the students with the lowest demonstrated successes to date. The commitment as suggested in the plan of action for the establishment of the task force and for future assignment of resources to the priority schools is not without cost. However, this cost is minimal in comparison with the price which will be paid in years to come if the educational potential of the students in these priority schools is left untapped, unchallenged, and underutilized as we prepare them for adult citizenship in the adult community of tomorrow."

Beginning in the spring of the 1981-82 school year a number of steps were taken to improve the learning environment and teaching effectiveness in these schools with good success. As part of the continuing effort to improve the programs in these schools, school district personnel examined and adopted a program for instructing students in these schools in 1983 in the use of "thinking skills."

The thinking skills program selected by the school district was the Strategic Reasoning program published by Innovative Sciences, Inc. District personnel were impressed by the theoretical soundness of the program and by the reported gains in achievement by learners in other large city school districts. The program is based on Dr. Albert Upton's Design for Thinking and Dr. J. P. Guilford's Structure of the Intellect.

The program was initially introduced in 1983 into two northside middle schools. Gilcrease and Monroe, and Carver, the district's only magnet middle school. The initial results were reported in the September, 1984 issue of Educational Leadership in an article written by Larry Alexander, Principal at Gilcrease Middle School and myself. In general, learner and teacher reaction to the program were very positive and achievement gains in those schools were greater than expected.

Because of the generally positive experience with the programs in 1983-84, school district personnel decided to implement the program in each of the district's fourteen remaining middle schools during the 1984-85 school year. The basic plan is to phase the program in over a three-year period beginning in the sixth grade.

The basic assumption underlying the Strategic Reasoning program is that it is possible to improve the ability of learners to think effectively and to transfer these skills from non-academic material to academic material and finally to "real life" situations. Once learned, the skills will enhance student achievement and success in a variety of subject areas in the school curriculum.

The program is implemented in four stages. In Stage-One, students are introduced to the six thinking skills and are made aware that they do think and that they can learn to think better. In Stage Two, learners develop their ability to perform each of the six thinking skills better and to use each of them to solve problems of all kinds.

Stage Three involves helping learners to transfer their improved thinking skills to the learning and comprehension of a wide variety of interdisciplinary subject matter.

In Stage Four, learners are taught to apply their improved thinking and reasoning abilities to analyzing and solving real-life problem situations that any individual is likely to encounter.

Since the program requires the learner to become aware of six thinking skills or mental processes, perhaps a brief description of each is in order. The primary skill is Thing-making, the mental process of becoming aware of a "thing," and identifying it with its name, symbol, or image. The second skill of Qualification is the mental process of recognizing the unique characteristics--sensory, logical, emotional--of a thing. For example, an apple is red, juicy, and sweet, among other things.

The third skill, Classification, is the mental process of sorting things into groups according to common qualities. The fourth skill of Structure Analysis is the process of becoming aware of the relationship between a whole thing, or structure, and its parts.

The fifth skill is Operation Analysis and it includes the mental process of becoming aware of the relationship between an event, operation, or transformation and each of its stages and substages. To illustrate, stop for a moment and think through the stages or steps involved in changing a flat tire.

The final skill is Seeing Analogies, the mental process of recognizing a similarity between relationships or things. That is, it permits the learners to perceive that Thing A is related to Thing B as Thing X is related to Thing Y.

It is important to understand that the Strategic Reasoning program is not a total, stand alone program, but must be integrated with one of the regular programs such as English or reading. The ease with which the integration can take place is readily understood when one considers the similarity of the definition of the skill of thing-making and the definition of a noun. Once instruction is completed in Stage One, which requires eight consecutive class periods, the remainder of the program is taught one day per week.

Teacher and learner responses to the program in Tulsa have generally been very positive. As an example, a Cleveland Middle School teacher wrote:

> At Cleveland Middle School, one indicator of the success of the Strategic Reasoning program has been the low rate of absenteeism among the sixth-grade students on the day scheduled for the weekly Strategic Reasoning lesson. The normal rate of absenteeism is between 10% and 15% for sixth-grade pupils. On Strategic Reasoning day, this rate drops to between 3% and 7%.

In another middle school, when a change in schedule to accommodate a field trip caused learners to fear that they were going to miss the thinking skills lesson for the week, they protested vigorously until the teacher assured them that they could schedule it on the following day.

Once it is determined by school district personnel that productivity gains in the district can properly be addressed by a thinking skills program, extensive preparation and teacher training are required to properly implement this program. Some teachers are uncomfortable with the teaching strategies that are most effective in implementing the program and must be retrained. The district

must also be prepared to develop a plan for carefully monitoring the implementation of the program and for evaluating the results.

In his book Megatrends, John Naisbit* described in great detail the transition of America from an industrial society to an information society. The transition has been nothing short of a mammoth communications revolution. The sheer volume of information has increased four or five times in recent years. Huge masses of information can be analyzed, stored and retrieved in a fraction of a second. Communication with nations and cultures on the other side of the globe occur instantaneously.

Educational programs designed to prepare people to live in an industrial society clearly are no longer adequate to prepare people to live in an information society.

It may be too simplistic to suggest that the introduction of thinking skills instruction is the solution to America's search for more effective schooling.

It seems clear to me, however, that the traditional memory- and drill-based methods are inappropriate as the principal means for educating today's students. What is needed is to teach students how to aggressively deal with information so that they understand it and can use it to meet the challenges of the information society.

I believe the introduction of thinking skills instruction is a significant step toward improving the quality of education toward this end in the Tulsa Public Schools.